

Versatile Electric Propulsion Aircraft Testbed, Phase I

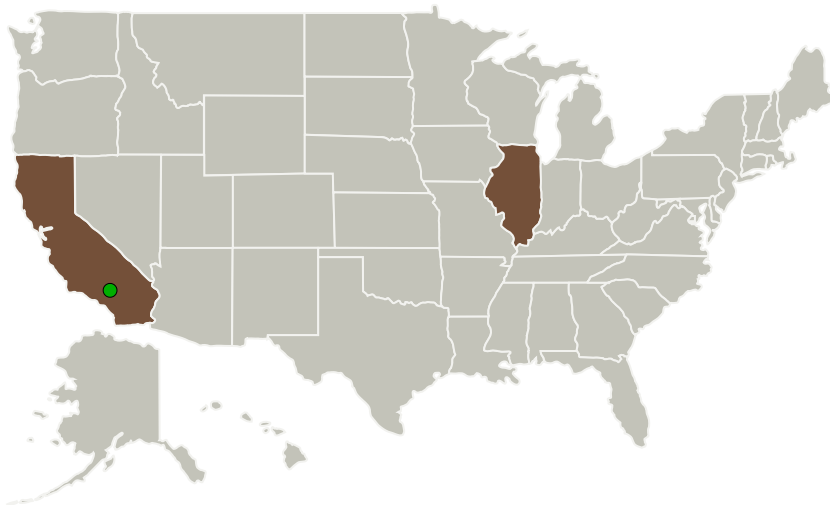
Completed Technology Project (2011 - 2012)



Project Introduction

An all-electric aircraft testbed is proposed to provide a dedicated development environment for the rigorous study and advancement of electrically powered aircraft. The new testbed aircraft will be developed from an existing conventional airframe and provide a dedicated platform to study, design, and test electrically powered propulsion systems for use in commercial, military, and general aviation vehicles. The testbed aircraft will allow various electrical propulsion system technologies to be tested to determine performance, reliability, safety, and cost. These include various battery, fuel cell, super capacitor, and motor technologies. Additionally, the new aircraft could be used to study energy-harvesting solutions including photovoltaics, vortex energy extraction, and piezoelectrics. An electric aircraft has several significant advantages over a conventional internal combustion driven aircraft. These include zero, or near zero emissions, increased reliability and safety with only one moving part, reduced noise and vibration, increased comfort, and reduced maintenance. RHRC and the University of Illinois propose to develop an all-electric testbed aircraft able to systematically evaluate new and existing technologies, which will make these systems, safe, reliable, and cost effective.

Primary U.S. Work Locations and Key Partners



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Aircraft Testbed, Phase I

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Organizations Performing Work	Role	Type	Location
Rolling Hills Research Corporation	Lead Organization	Industry	El Segundo, California
● Armstrong Flight Research Center(AFRC)	Supporting Organization	NASA Center	Edwards, California
Board of Trustees of the University of Illinois	Supporting Organization	Academia	Champaign, Illinois

Primary U.S. Work Locations

California

Illinois

Project Transitions

▶ **February 2011:** Project Start

✓ **February 2012:** Closed out

Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/138561>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Rolling Hills Research Corporation

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Michael Kerho

Co-Investigator:

Michael Kerho

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Technology Maturity (TRL)

Start: **1**
Current: **3**
Estimated End: **3**



Technology Areas

Primary:

- TX01 Propulsion Systems
 - └ TX01.3 Aero Propulsion
 - └ TX01.3.8 All Electric Propulsion

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System